Research Paper: At What Age Do People in Iran Use Complete Denture for the First Time? A Cross-Sectional Study Within a 10-Year Period

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ABSTRACT

Introduction: Becoming completely edentulous is a major concern of dentists and other health care providers. It mostly targets aged population and has numerous comorbidities. An old-fashion but currently used treatment plan for edentulism is the complete denture method. In this study, we aimed to investigate the time when older people in Iran are in need of complete dentures and the reasons for tooth loss in this country.

Materials and Methods: The medical records of 200 patients were collected from Shahid Heidari dental clinic for the study. Patients were completely edentulous and treated with complete dentures for the first time. Their systemic disease, periodontitis and smoking status were analyzed at a significance level of $P<0.05$.

Results: The Mean±SD age for becoming edentulous was 52.1±1.07 years. Most populated age group was 45-50 and 55-60 years. Systemic disease and periodontitis was reported more in younger patients, while most of those who smoke aged more than 52 years.

Conclusion: It can be concluded that the mean age of becoming edentulous in Iran is significantly lower than in other countries and more studies are required to assess the current status of edentulism in Iran. There is also a need for implementing an enhanced dental care plan for Iranian elderly population.

1. Introduction

Complete edentulism is a major concern of dentists and it mostly affects aged population. This problem has a direct impact on person's quality of life including psycho-logical, biological and social aspects [1-3]. Elderly population worldwide are growing. In some countries, some investments have been made on providing geriatric dental services for aged population following treatment [4]. Edentulism decreases the quality of nutrition and is associated with dietary deficiency. Edentulous patients tend to eat specific types of

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food including soft and easy to chew foods and are influenced by masticatory malfunctions that mostly leads to psychologic and nutritional problems [5, 6]. Etiology of this condition is multi-dimensional including physical, economic, social and genetic aspects. It has been reported that the prevalence of edentulism is related to many factors such as culture, accessibility of dentist, socioeconomic status and oral hygiene [7, 8]. There has been reports on the decrease of edentulism in developed countries, although it has not been eradicated based on the global statistics. Adults tend to retain their natural teeth for a longer time [1, 4, 9].

It would be great if we could treat all edentulous patients with implant-supported prosthesis, but complete denture fabrication is still the most common and traditional treatment method. This method, however, have some complications including esthetic problems, loss of retention, acrylic base fracture, loss of artificial teeth, difficulty in speech and mastication, resorption of alveolar ridge and some other conditions such as denture stomatitis and angular cheilitis. Denture wearer may suffer from an impaired flavor perception and olfactory sensation [9-11]; however, patients treated with complete denture have lived longer and are more satisfied with life than completely edentulous patients [1].

Several studies have investigated the quality of life in edentulous patients and in those using complete dentures, but only a few of them have investigated the first time that they used complete dentures. It is believed that the age of becoming edentulous is increasing while its prevalence decreasing [1, 12]. A group of people assume that tooth loss is not a big problem and their teeth can be replaced with dentures very easily; thus, they ignore their oral health and become edentulous sooner than expected requiring a set of complete dentures[1]. Since less studies and reviews have been conducted on the age of wearing the first complete denture in Iran, and considering the importance of complete denture method in prevention and treatment of edentulism, this study aimed to determine the age of using first complete denture and its related factors.

2. Material and Methods

The is a descriptive study with cross-sectional design having an ethical approval obtained from Shahid Heidari dental clinic (Tehran, Iran). A total of 400 patients' medical records were collected from the dental prosthetics sector of the clinic. Patients included those who were completely edentulous, with no history of previous treatment, and wearing complete dentures since 2001-2011. Those with incomplete medical records, previ-

ously treated ones and those who were unwillingness to continue participation were excluded from the study. In the end, 200 patients' files were selected for the study. Each file contained demographic characteristics (name, address, gender and education level), date of visit, chief complaint, medical health status and dental history). The mean age of becoming edentulous in patients was calculated and at a 90% confidence interval and described with Mean and Standard Deviation (Mean±SD). The effect of edentulism related factors such as systemic and periodontal diseases, smoking, education level and gender was analyzed using Chi-squared test and ANOVA in SAS v.9.1 software. The difference was considered statistically significant if $P<0.05$. Patients' personal information remained confidential.

3. Results

The mean age of participants was 52.1 ± 1.07 years ranged from 21 to 75 years. As shown in Table 1, there was 12 age groups with a 5 year interval. The 55-60 age group was the most populated group followed by the 45-50 group, while the 30-35 and 75-80 age groups were the least populated.

Table 2 presents the results of examining the relationship between gender, periodontal and systemic disease, smoking, education level and age. The number of male patients received the first complete denture was 1.5 times more than that of females. Periodontitis was observed mostly in patients with a mean age of less than 52 years, while more than half of the other groups had no sign of periodontitis. Patients younger than 52 years of age had more systemic disease but tended to smoke less than other group. The minority of both groups (<52 years and >52 years) had university degrees and most of them were undergraduate.

Figure 1 plots a comparison between smokers and non-smokers in our study. As can be seen, the majority of smokers had ages more than 52 years, while non-smokers were mostly younger than 52 years of age. Figure 2 illustrates the relation between systemic disease and age. As can be seen, most of patients with a history of systemic disease had ages less than 52. The relation between the history of periodontal disease and age is illustrated in Figure 3. Periodontally compromised patients mostly consist of younger subjects; those with age >52 had less periodontal problems.

4. Discussion

In this study we aimed to determine the age of using complete denture for the first time among Iranian popu-

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Table 1. Distribution of the age groups received the first complete denture

Age Groups	No. (%)	Cumulative Percentage
20-25	4 (2)	2
25-30	5 (2.5)	4.5
30-35	2 (1)	5.5
35-40	5 (2.5)	8
40-45	22 (11)	19
45-50	40 (20)	39
50-55	33 (16)	55
55-60	41 (20)	75
60-65	20 (10)	85
65-70	17 (8)	93
70-75	9 (4)	97
75-80	2 (1)	98

lation. Several studies have examined the quality of life in edentulous patients; however, less studies have been conducted to investigate the age of becoming edentulous especially in Iran [13]. It is very importance to know when the population becomes edentulous and are in need of oral rehabilitation so that it can be prevented by prescribing the right treatments for predisposing situations than can lead to tooth loss. This may help government,

Table 2. Relation between age, gender, periodontal and systemic diseases, smoking and education level

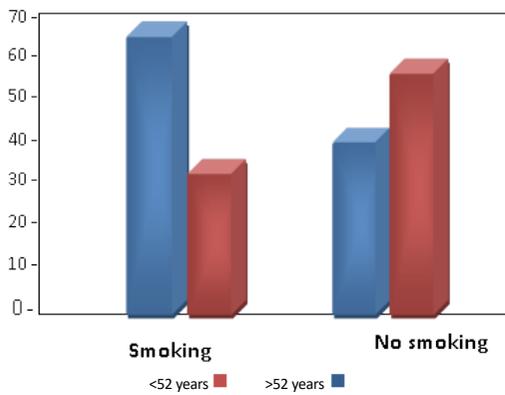| Variable		No. (%)		P
		>52 Years	<52 Years	
Gender	Male	70 (58.3)	50 (41.7)	0.007
	Female	30 (38.8)	50 (61.3)	
Periodontitis	Yes	43 (43.9)	55 (56.1)	0.06
	No	57 (56.9)	45 (43.1)	
Systemic disease	Yes	15 (25)	45 (75)	0.001
	No	86 (61)	54 (38.6)	
Smoking	Yes	47 (67.1)	23 (33.9)	0.001
	No	54 (41.5)	76 (85.5)	
Education	Senior high school	57 (28.5)	58 (29)	0.001
	High school diploma	35 (17.5)	24 (12)	
	University education	19 (9.5)	7 (3.5)	

Neshandar H, et al. Using Complete Denture for the First Time. J Dentomaxillofacial Radiol Pathol Surg. 2018; 7(4):167-172.

169

Figure 1. Frequency of smokers and non-smokers received the complete denture for the first time

Figure 2. Frequency of patients with a history of systemic disease received the complete denture for the first time

insurance companies and dentists manage this major problem in a better way. The prevalence of edentulism among the elderly people in three developed countries of Canada, Finland, and United Kingdom is 58%, 36%, and 46%, respectively. The studies on the prevalence of edentulism in Iran are limited [9, 13]. In our study, the mean age of edentulism was 52 years while in the study of Gunday et al. (2009) in a 20-year period in turkey, they claimed that the mean age of becoming edentulous in 1987 was 44.3 years and reached 59.7 years in 2007. This means that the edentulous population of turkey are becoming older which indicated the improvement in dental treatments in this country. Muller et al. (2007) studied the incidence and prevalence of tooth loss in European countries by evaluating some edentulism related factors such as socio-economic factors, general health, urban/rural residency, alcohol use, and smoking. They concluded that the prevalence of edentulism is decreasing in European countries, but the World Health Organization
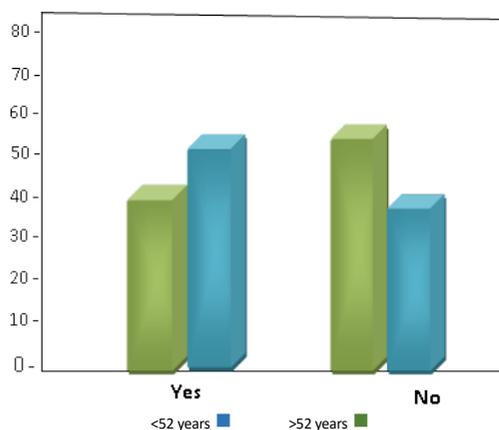
(WHO) criteria has not yet been met. Contrary to our study, Muller did not mention at what age the patients received their complete denture as the first treatment [14]. In our study, the factors of smoking, education level, and history of periodontal and systemic diseases were assessed and the results showed that edentulous patients aged>52 years were less prone to periodontal and systemic diseases but were more likely to smoke and their education level was lower than those aged<52 years. We proposed that younger edentulous individuals were more prone to periodontal disease prior to tooth loss which can be due to poor oral hygiene regimen, compromised immune system and etc. Gunday et al. reported tooth mobility and periodontal problems as the main reasons of edentulism [1]. In our study, smoking was recognized as a risk factor for tooth loss mostly in older patients. Chong Ren et al. and Muller et al. reported the same relationship between smoking and tooth loss [14, 15].

We did not perform oral examination and face-to-face interview with the subjects in this study which could help find more information about their general health and possible mucosal lesions after using complete dentures. The number of participants was also limited and no study was performed on some other factors including alcohol use, oral hygiene habits, urban/rural residency, medications and etc.

5. Conclusion

It is concluded that the mean age of becoming edentulous in Iran is lower than the age reported in developed countries and, therefore, people in with need complete dentures sooner. This indicates that people's awareness on edentulism is compromised and further preventive measures are expected from the Ministry of Health and related organizations. There is lack of sufficient

Figure 3. Frequency of patients with a history of periodontal disease received the complete denture for the first time

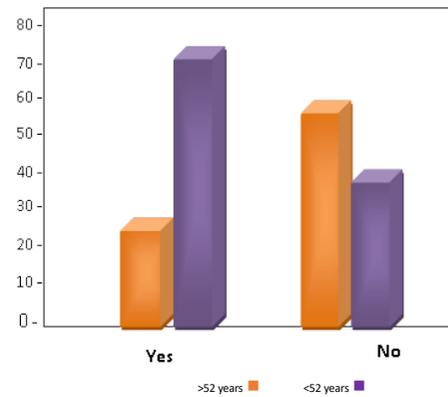evidence-based data on edentulous patients; more investigations are required to assess edentulism problem, its prevalence, comorbidities and quality of life in edentulous patients in Iran.

Ethical Considerations

Compliance with ethical guidelines

There was no ethical considerations to be considered in this research.

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Authors contribution's

All authors contributed in preparing this article.

Conflict of interest

The authors declared no conflict of interest.

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Neshandar H, et al. Using Complete Denture for the First Time. J Dentomaxillofacial Radiol Pathol Surg. 2018; 7(4):167-172.

171

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